16.(New) The improved packaging material according to claim 1, wherein said polymeric material has a CO_2 transmission rate that is 3.4 to 4.0 times greater than the O_2 transmission rate.

Remarks/Arguments

Applicant thanks the Patent and Trademark Office for their careful consideration given to this application. The communication from the Office rejects claims 1 – 14. Applicant also requests a review and acceptance of the drawings filed with the application.

The Applicant has reviewed the Office Action in particular detail along with the cited prior art in preparation for the following response. The Applicant believes there is a fundamental difference in the prior art and the subject matter according to the present set of claims should be considered patentable.

No claim amendments in this case were related to the statutory requirements of patentability unless expressly stated as such, and no amendment was made for the purpose of narrowing the scope of the claim unless expressly stated as necessary to distinguish over a particular prior art reference or combination of references.

(Item 1-4) Election/Restrictions

The Office requested an election pursuant to 35 USC Section 121 for claims 1-14 drawn to a packaging material and claims 15-20 drawn to a produce packaging material. On or about June 20, 2002, Applicant made an election with traverse for claims 1-14. Applicant confirms the election and respectfully cancels claims 15-20 without prejudice.

(Item 5-6) Claims Rejections - 35 USC §112 Second Paragraph

The Office rejects claims 1 – 14 under 35 U.S.C. 112 second paragraph for indefinite A §112 second paragraph rejection has two separate requirements, indefiniteness and failing to claim what applicant regards as the invention. With respect to indefiniteness, the "essential

inquiry pertaining to this requirement is whether the claims set out and circumscribe a particular subject matter with a reasonable degree of clarity and particularity. Definiteness of claim language must be analyzed, not in a vacuum, but in light of (1) the content of the particular disclosure, (2) the teachings of the prior art, and (3) the claim interpretation that would be given by one possessing the ordinary level of skill in the pertinent art at the time the invention was made." (MPEP §2173.02).

A rejection stating that the claims fail to set forth the subject matter that the applicant regards as the invention is only appropriate where the applicant has stated that the invention is something different from what is defined by the claims (MPEP §2172(a)). There is a presumption that the claims describe the applicant's invention, absent evidence to the contrary.

In particular, the Office believes that claim 1 recites "said set of microperforations are calculated", which the Office finds unclear. The specification of the present invention describes the meaning of a 'set of microperforations' as referring to the microperforations needed to obtain an optimal packaging environment, and more specifically to creating an environment for particular O_2 and CO_2 transmission rates for the specific packaging application. If the Office is referring to the property of the microperforation, it refers to the physical properties related to the size, shape and number of microperforations. Applicant is not merely using a laser to make microperforations – the number/size/shape of the microperforations are matched to the optimal longevity of the packaged fresh produce. Applicant believes that the clarifications submitted herein are responsive but can provide explanation by telephone if desired.

The Office also believes that 'registered target area' in Claim 1 is indefinite. As described in the present application, the registered target area is a well-defined location for the microperforations as opposed to the non-localized distribution of microperforations throughout the packaging material length and width, a condition which would make the microperforations subject to occlusion. If the microperforations are not localized in a specific area, they may be blocked by labels or occluded by package-to-package contact in case carton packing. Therefore, to ensure obstruction-free microperforations and controlled oxygen transmission rates, the placement of microperforations is accomplished as described in the present application. As noted in the specification beginning on Page 9, line 16, "[i]n the preferred embodiment, the optimal

size, shape and number of the set of microperforations for the particular product is used for the registered target area. In most cases, the target area is a small identifiable area in an upper third or quarter of the package. More preferably, the registered microperforations are placed in any area that will not be occluded by produce or other packages during shipping and storage."

Claim 2

Claim 2 is rejected due to the Markush arrangement, and has been amended accordingly. Applicant thanks the Office for their attentive reading of the claims.

Claim 3 and 8

The Office also rejects the use of 'sealable' as indefinite in claims 3 and 8. The term 'heat-sealable' is a term of art in the industry and it refers to the packaging material being 'heat-sealable' – which is the correct industry standard fashion of referring to such materials.

One description of heat-sealable materials is provided in – *The Wiley Encyclopedia of Packaging Technology*, published by J. Wiley & Sons; pages 458-459, section entitled Multilayer Flexible Packaging. The lidding process on pages 440-442 in the section entitled Lidding, refers to sealing containers, such as semi-rigid containers, to seal the contents within the container. A further description is detailed in *A Handbook of Food Packaging*, pages 136-137. The lidding processing and general configuration is shown in the thermoformed packs of Figure 4-46 on those pages.

As noted in the text, the terms 'heat-sealable and 'heat-sealable films' are well known and depicted in the prior art. Heat sealing itself refers to the process of melt sealing of the heat-sealable packaging material through heat and pressure. Various techniques and packaging materials are described in the prior art relating to heat-sealable subject matter. Applicant believes that claim 3, as written – 'wherein said polymeric material is heat-sealable' and 'heat-sealable lidding films' – is proper and is willing to provide further support by a telephone interview.

The heat-sealable packaging material having microperforations is not typically sealed before it is made into a bag or semi-rigid container. For example, in automated bagmaking

operations, a customer using a vertical form-fill-seal machine places a roll of heat-sealable packaging film on the machine and forms a tube (with the aid of a forming collar or shoulder) by sealing the two edges of the film web together, making a long (vertical) seal in what will become the center of the back panel of the bag. A horizontal heat seal is then made at one end of the tube of film to form the bag. The formed bag is filled with produce and then the final end seal is automatically made to enclose the contents. For less automated operations, the customer is supplied with premade bags and these bags are manually filled with produce and the open end is heat-sealed. Enclosed from *The Wiley Encyclopedia of Packaging Technology*; pages 367,368 is a section entitled FORM/FILL/SEAL, VERTICAL that explains one well known process for bag packaging.

Claim 5-6

The units describing the flow of a O_2 or CO_2 through a packaging material are "flux", expressed as cc/day-atm. For example, O_2 Flux is calculated by multiplying the OTR (oxygen transmission rate) of the film (cc/m^2-day-atm) by the surface area of the film (m^2). The calculation results in the cancellation of the area dimension so the flux units are in cc/day-atm.

Claim 7

The reference in claim 7 to 'wherein the polymeric material forms a bag' was considered indefinite. However, the term refers to a bag formed of the polymeric material as properly noted by the Office.

Claim 8

In claim 8, 'lidding film' was considered indefinite as to whether a 'lid of film' is claimed. As detailed herein, the term lidding film is well known to those skilled in the art and is the proper term for describing the subject matter of the claim. Once again, Applicant refers to *The Wiley Encyclopedia of Packaging Technology*; pages 440-442, section entitled Lidding and in *A Handbook of Food Packaging*, pages 136-137. The polymeric material from claim 1 has 'a set of microperforations' and therefore the lidding film has microperforations.

Claim 10 and 11

Claims 10-11 were considered indefinite in reference to the phrases 'upper quarter' and 'upper third'. These claims have been recast to more clearly articulate the subject matter of the claims in accordance with Figure 2 and the relevant description of the location of the microperforations.

Claim 13 and 14

The ranges of claims 13 and 14 have been recast to include both sets of ranges for each claim with additional claims for the range sets.

Claim 9

The Office also rejected claim 9 for being indefinite with respect to the term 'semi-rigid' that was not considered properly described in the specification. The present application references 'semi-rigid- in a number of descriptions and examples. The term is also well known in the art in reference to the subject matter of the present invention, for example on Page 9 beginning on line 6. Applicant is not claiming the semi-rigid container as a novel element of the present invention but rather the use of the microperforations of the present invention incorporated into the semi-rigid materials. See Exhibit J for an example of a semi-rigid container and page 9, line 6 for further explanation. See also *The Wiley Encyclopedia of Packaging Technology*; pages 201-203, section entitled Coextrusions for Semirigid Packaging

The Applicant believes that the amended claims particularly point out and distinctly claim the subject matter that the applicant regards as his invention. No new matter has been added. Reconsideration and allowance is requested.

(Item # 7-8) Claim Rejections- 35 U.S.C.§ 102

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v Union Oil Co. of California*, 814 F2d. 628, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987), MPEP §2131.

The applicant respectfully traverses the rejection of claims 1-3, 5-12 and 14, and submits that the claims, as amended, are in compliance for allowance.

The office rejects claims the above-referenced claims as anticipated by De Moor, US 6,013,293. The De Moor reference discloses a packaging system well known to the present inventor for the microporous membrane and the apertured cover member over the membrane. Applicant believes it would be helpful for some instruction in the particular field of art to gain a better understanding of the subject matter.

Microperforated v. Microporous Films

Often the terms microperforated and microporous are incorrectly used interchangeably to describe high permeability polymer films. However, the two terms connote very different manufacturing processes for making the films. In turn, the films have different structures, gas transport properties, and susceptibilities to microbial penetration.

Structural Differences

It is not difficult to determine whether a film is microperforated or microporous. Visually, most microperforated films are clear films, while microporous films are opaque. The physical structures of the two types of films, as determined with a microscope, are very different. Their structures provide clues to how they function.

Microperforated films contain holes ranging in diameter from approximately 25 to 400 microns. The microperforations are made in the film using mechanical, spark, or laser methods. These methods produce uniform diameter holes. The holes are often described as cylindrical capillaries going straight through the entire film cross section (Fig. 1). The size of the microperforations can be easily determined using a light microscope.

Microporous films, like the polymeric material described in De Moor, are produced by extruding a polymer/inert filler mixture and running the extrudate through a series of heated rolls. The filler (e. g., silica or calcium carbonate) acts to produce micro-voids or pores in the structure during film processing. Microporous films have pore diameters approximately the size of the

filler particles used to make the films. Pores as small as 0.2 to 0.4 microns and as large as 1 to 3 microns can only be visualized using high power electron microscopes like a scanning electron microscope. These pores are not visible with a light microscope.

Unlike microperforated films, the pores in microporous films do not follow a straight path through to the other surface of the film. Instead, a tortuous pore structure, resembling a sponge with a network of interconnecting pores, is typical for microporous films (Fig. 2). This structure affects the way gas is transported across the film through to the other surface of the film – thus they are not direct capillaries normal to the film surface.

Differences in Gas Transport

For homogeneous, non-porous films like polyethylene or polypropylene films, gases are transported across the film by first dissolving in the film at one surface, migrating (diffusing) through the film under a concentration gradient, and finally evaporating from the surface at the lower concentration.

The permeability of the base film, whether it is polyethylene, polypropylene, polyester; or a number of different polymer structures, used for making microperforated film contributes significantly less to the total gas transport through the film than the microperforations themselves. The major gas transport is through the microperforations. The microperforations provide no physical barrier for the gas to traverse. Microperforations are open conduits to the atmosphere inside the package. Mass transport is the primary means by which O_2 enters and CO_2 exits the package.

The rate of gas transport through a microporous patch affixed to a non-porous film (like the invention discussed in De Moor) depends on pore size and organization within the film cross-section. Gas can readily penetrate pores on the surface of the film via mass transport, but once the gas molecule reaches an interconnecting polymer layer, it must diffuse through the wall to the adjacent pore. This process continues through each successive polymer layer making up the cross section until the gas reaches the other side of the film where it evaporates off the surface.

Both microperforated films and microporous patches that are affixed to non-porous films effectively control the atmosphere inside produce packages. The equilibrium oxygen concentrations inside a produce package made with microperforated film depends on produce-related factors (respiration rate of the produce as a function of temperature) and the oxygen transmission rate (OTR) of the microperforations, which is determined by the size and number of microperforations in the package.

The equilibrium oxygen concentrations inside a produce package made with a microporous patch (membrane) affixed to a non-porous film depends on the porosity of the microporous patch and the OTR created by that porosity, which is a function of polymer formulation used in making the microporous film. Different microporous film formulations (having different ratios of inorganic filler to polymer resin) give different OTRs and different steady state O_2 and CO_2 concentrations inside the package. In addition, any coatings applied to the surface of the microporous patch will alter the OTR.

At the same OTR, the water vapor transmission rate (WVTR) through a microperforated film is greater than that through a microporous patch affixed to a non-porous film. There is no physical barrier to water loss from a microperforated film. In contrast, microporous films with their tortuous network of interconnecting cells, limit moisture loss from the film.

Liquid and Microbial Penetration

If a produce bag, made from a microperforated film (such as in the range of 25-400 micron size), is filled with water before heat-sealing the end of the bag, applying slight pressure to the bag with the hands would force water out through the microperforations. In contrast, pressures greater than 1 atm (14.7 psi) would be needed to force water through the pores of a produce bag made from a microporous film.

The ability of microbes to penetrate the perforations in microperforated films depends on the size of the perforations and the diameter of the microbes. Many microorganisms have minimum diameters of less than 5 microns. Such small microbes could easily traverse a capillary perforation of 40-400 microns.

In contrast, the tortuous pore structure present in a microporous film (Fig. 2), makes it extremely difficult for even the smallest microbes to penetrate through the entire structure. Those microbes that make it through a pore in the top surface of the film would be stopped by the interconnecting polymer layers making up the sponge-like cells of the interior structure. It is not surprising, therefore, that microporous films (often called membranes) are used to filter microorganisms from solutions and to prevent contamination of sterilized utensils used in surgery.

Claim 1 - 2

Claim 1 defines the inventive subject matter of an improved packaging material that has microperforations – not a microporous material – wherein the microperforations are calculated according to the respiring fresh produce to optimize the oxygen transmission rate. And, wherein the microperforations are placed in a target area on the material. The microporous film is produced by a process that creates lateral air flow and there is no 'target area' that can be employed as defined in the present invention. Microperforations are holes normal to the packaging material and the location is selected to avoid occlusion.

Applicant does not believe that De Moor or any other prior art describes or discloses a packaging material such as claimed in the present invention.

Claim 3

As noted herein, 'heat-sealable' refers to the term used in the art and Applicant is claiming the microperforated packaging material being heat-sealable. Applicant is not claiming a 'heat-sealable' microporous material and this dependent claim describes a further attribute of the independent claim. Heat-sealable materials are described in general in De Moor and in the various texts – but not in accordance with having microperforations to control oxygen transmission.

Claim 5-6

As described herein, the flux refers to the transmission rate of the microperforated polymeric material which is distinguished from the microporous materials. The ranges of these claims are dependent claims attributes from the independent claim. De Moor describes a 'gas-permeable membrane' cooperating with the 'dimensions of the aperture' to admit sufficient oxygen

(Col 5, lines 35-51). As noted in claim 1 of De Moor, the microporous membrane includes an aperture – the present invention does not need an aperture as the microperforations control the transmission rates.

Claim 7-9

The polymeric bag, heat sealable lidding film, and semi-rigid container are all further attributes related to claim 1. Each of these are properly described in relation to the microperforated packaging material and there attributes noted. As detailed herein, the microperforated packaging material with registered microperforations coordinated to match the respiring fresh produce is a new and useful invention – the dependent claims articulate further features of the present invention.

Claim 12

This claim refers to the registered target area of microperforations - there is no particular relevance to the film being gas permeable with respect to the microporous material of De Moor.

Claim 14

As noted herein, the transmission rates defined herein are related to the microperforated material for which the microperforations are calculated according to the respiring fresh produce.

Based on this understanding of the subject matter, the Applicant believes the present invention is easily distinguishable from De Moor. The difference between microporous and microperforations differentiates the De Moor reference and allowance of all claims is respectfully requested.

Claims Rejections - 35 USC §103 (a)

It is useful to consider the standard of patentability that is applied in obviousness rejections. According to *Graham v. John Deere*, 383 U.S. 1, 148 USPQ 459 (1966):

> Under 103, the scope and content of the prior art to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or nonobviousness of the subject matter is determined. Such secondary consideration as commercial success,

> long felt but unsolved needs, failure of others, etc..., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented. As indicia of obviousness or nonobviousness, these inquiries may have relevancy...
>
> This is not to say, however, that there will not be difficulties in applying the nonobviousness test. What is obvious is not a question upon which there is likely to be uniformity of thought in every given factual context. The difficulties, however, are comparable to those encountered daily by the courts in such frames of reference as negligence and scienter, and should be amenable to a case-by-case development. We believe that strict observance in that uniformity and definitiveness which Congress called for the in the 1952 Act.

Furthermore, according to the MPEP §2143.01, "[o]bviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found in either the references themselves or in the knowledge generally available to one of ordinary skill in the art."

A useful presentation for the proper standard for determining obviousness under 35 USC §103(a) can be illustrated as follows:

1. Determining the scope and contents of the prior art;
2. Ascertaining the differences between the prior art and the claims at issue;
3. Resolving the level of ordinary skill in the pertinent art; and
4. Considering objective evidence present in the application indicating obviousness or unobviousness.

The Office states that claims 4, 13 are rejected under 35 USC 103(a) as being unpatentable over De Moor and Clarke et al (U.S. Pat. No. 6,376,032).

Claim 13

With respect to claim 13, the Office states that sizing of the pores being 100-400 microns pore diameter would be an obvious extension of De Moor. As discussed herein, De Moor discloses <u>microporous</u> materials having pore size typically of about .24 microns. This is the common pore size for the microporous films currently used in the industry. These microporous packaging products are well known by the present Applicant, but are not the focus of the present application. The present application is concerned with microperforated packaging and the respective pore sizes as disclosed in conjunction with using the pore size/number to control the

atmospheric condition of the packaging and placement of the microperforations to avoid occlusion.

The computer controlled microperforation systems are known in the art – however there are no commercial prior art or published materials that have ever disclosed a commercial system that calculated the microperforations based upon the characteristics of the respiring fresh produce – thereby producing a microperforated packaging material with these calculated microperforations, which is the subject matter of the present application. As fully described in the present application, the microperforated packaging material of the present invention are calculated to control the package atmosphere within specified O_2 and CO_2 concentrations.

The range of pore sizes in claim 13 being between 110-400 microns merely stipulates a preferred <u>microperforation</u> size pore for a particular embodiment – the <u>micropores</u> of De Moor are not relevant to the inventive subject matter and the De Moor pore size does not result in the present invention.

Claim 4

The Office also rejects claim 4 by including the microporous packaging of Clark with a thickness of .03 to .65mm. As discussed, Clark is another microporous composition and the multi-layer mesh pattern of Clark is a different invention than the microperforated polymeric material of the present invention. The thickness of the microperforated material being between 0.4 - 8 mils is an aspect from the independent claim.

Other Considerations:

There is an enormous benefit to optimizing the shelf life of produce and vegetables. The consumer benefits by having better quality products with a longer refrigerator shelf life; the stores have a better control of inventory and can handle larger shipments less frequently; the stores also benefit by having less waste from spoilage and the associated costs with trash removal; and finally, the entire economy benefits from the efficiency, wherein stores have a better profit margin that is passed down to consumers through lower prices.

While computer controlled microperforation systems are known in the art – there is no commercial prior art or published materials that have ever disclosed a commercial product, process or system that calculated the microperforations based upon the characteristics of the respiring fresh produce matter. As fully described in the present application, the microperforations of the present invention are calculated to control the fresh produce package atmosphere within specified O_2 and CO_2 concentrations.

According to USDA-NASS Agricultural Statistics 2001 (www.usda.gov/nass), about 40 billion pounds of fresh produce are shipped each year. A conservative estimate of the total value of such shipments is $40 billion. Estimates of post-harvest losses of fresh produce, caused by a number of factors including temperature miss-management and inappropriate packaging, vary along the distribution chain. For whole produce, losses (spoilage) at retail stores range from 3% to 7% depending on the type of produce. In the fresh-cut produce category (the produce is trimmed, peeled or cut before packaging), losses at retail can rise to as high as 15% (taken from *Produce Business*, May, 2001, pgs. 36-40). Therefore, it is an enormous economic benefit to optimize the shelf life of fresh produce. The retailer benefits by reducing losses; they can better control inventories and need to order less frequently. The stores also benefit because less waste from spoilage translates into lower costs for trash removal. The consumer benefits by having better quality products with a longer refrigerated shelf life. The entire economy benefits from the efficiency, wherein stores have a better profit margin that is passed down to consumers through lower prices.

It is well established and noted in the MPEP that objective evidence or secondary considerations such as unexpected results, commercial success, long-felt need, failure of others, copying by others, licensing, and skepticism of experts are relevant to the issue of obviousness and must be considered in every case in which they are present. When evidence of any of these secondary considerations is submitted, the examiner must evaluate the evidence. The weight to be accorded to the evidence depends on the individual factual circumstances of each case. Stratoflex, Inc. v. Aeroquip Corp., 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983); Hybritech, Inc. v. Monoclonal Antibodies, Inc., 802 F.2d 1367, 231 USPQ 81 (Fed. Cir. 1986), cert. denied, 480 U.S. 947 (1987). The ultimate determination on patentability is made on the entire record. In re Oetiker, 977 F.2d 1443, 1446, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992).

With respect to commercial success, the present invention is the subject of great commercial interest. Several licensing agreements have been signed and the industry has indicated that the unique characteristics and benefits afforded by the present invention are of extreme importance. One packaging company that has licensed this technology has increased their gross packaging sales by 5% in the first year of the licensing agreement. Prior to this agreement, that company had no sales in the fresh produce packaging market. Another company that has licensed this microperforation technology is gearing up to supply a major banana shipper with microperforated bags at a rate of 2MM bags per month. As other evidence of the commercial interest in this technology, several of the inventors' competitors have inquired about licensing the technology, and the inventor has had licensing inquiries from Israel, Mexico, and Australia.

In support thereof, the Applicant/Inventor is submitting a sworn declaration (37 CFR 1.132) to show and explain the secondary considerations pertaining to the present invention. Such secondary considerations provide probative and cogent evidence that should be considered in evaluating obviousness. The inventor is also very well-known and respected in the relevant industry to which the present invention applies. The expertise, know-how and show-how of the Applicant are in high demand, especially in relation to the attributes of the present invention. Such knowledge in the field and respect amongst those in the industry are better explained in the attached Declaration.

Besides licensing opportunities, there has also been at least one industry party that was attempting to copy the subject matter. Applicant contends that the commercial success, and attempts by other to copy the invention now that the product is in the marketplace supports a finding of unobviousness. Furthermore – if the present invention were an obvious variation – then it would be difficult to figure out why the advantages of the present invention were not claimed, published or used since computerized microperforation systems have been used for many years. However, no one has ever combined the computerized microperforation system utilizing the atmospheric calculations to manufacture a product that matches the characteristics of the fresh produce wrapped by the packaging. There is no discussion of placement of the pores in a non-occluded area or even of having a specific number/size of microperforations to control the atmosphere for a particular fresh produce product.

In order to help demonstrate the microperforated film produced according to the present invention, the Applicant is submitting several exhibits in connection with the Rule 132 Declaration:

Exhibit A – is a Markon bag made with 2mil PE base film with the microporous patch as taught by the De Moor patent. The patch allows the air to escape through the apertured cover member.

Exhibit B – shows the Markon microperforated 2 mil PE base film bag according to the present patent application with microperforations of a specific size/number according to the optimal respiration rate of broccoli and registered in a target area.

Exhibit C – illustrates the target area as described in the present application with the microperforations registered by the eye mark on polyethylene coextruded roll stock.

Exhibit D – shows the old scheme with microperforations not registered and merely placed in a linear path and subject to occlusion of some portion and therefore uncertainty in the rate of oxygen transmission.

Exhibit E – microperforations in a target area according to the present invention to minimize the effects from occlusion on bags made from polyethylene monoweb

Exhibit F – bags made of 1.2 mil BOPP (biaxially oriented polypropylene) with a heat seal coating with the microperforations registered in a target area according to the specifics of the present invention.

Exhibit G – 7 layer coextruded polyethylene film bags with target area microperforations according to the present invention.

Exhibit H – laminated bag with targeted microperforations according to the present invention

Exhibit I – heat-sealable lidding films with microperforations according to the present invention.

Exhibit J – semi-rigid lid with microperforations in a targeted location to avoid occlusion by the center label.

The Exhibits visibly demonstrate the use of the microperforations with varying size/number that are placed in certain areas to avoid occlusion. The Exhibits illustrate the microperforated technology used on a number of differing materials including semi-rigid containers and heat-sealable lidding films.

In one embodiment, all the major banana growers package green bananas in South America and Africa in 40-lb boxes that are lined with a plastic bag that is sealed and has no vents. The boxes

are palletized and shipped in container loads to the U.S. and Europe. When they reach their destination, each bag in each carton has to be ripped open by hand before the pallets are placed in ethylene gassing chambers to initiate banana ripening. The labor cost of ripping the bags open in each pallet is estimated to be $0.50/box. In addition, once the bags are ripped open, and ripening is initiated, banana shelf life diminishes quickly in ambient air. When the inventor's registered microperforated bags are used to package the bananas, this eliminates the need to rip open the bags since the ethylene gas readily penetrates the microperforations. The bags are designed with the correct number and size microperforations such that not only does the ethylene enter the bags, but the optimum levels of oxygen and carbon dioxide are maintained inside the bags during transit and storage so ripening is delayed and shelf life is extended. Controlling the atmosphere using the microperforation technology results in a 50-100% extension of banana shelf life, i. e., fewer losses (less overripe bananas) at the retail stores.

In summary, the present claims more accurately and succinctly define the invention. Applicant believes that the present invention is neither obvious nor contemplated by the prior art, and that the commercial success, copying by others, and unexpected results all contribute to a finding of that the present invention is unobvious. Applicant believes the above amendments and remarks to be fully responsive to the Office Action, thereby placing this application in condition for allowance. No new matter is added.

Request for Telephonic Interview:

Applicant believes the amended claims should place the application in condition for allowance. However, should the Office have any objections or questions, the Applicant requests an opportunity to discuss the subject matter of the present invention. This interview could quickly advance the processing of the present application.

In summary, the present claims more accurately and succinctly define the invention. Applicant believes the above amendments and remarks to be fully responsive to the Office Action, thereby placing this application in condition for allowance. No new matter is added.

Consideration and allowance of all claims is respectfully requested. Applicant further requests that Examiner contact his attorney by telephone, email, or facsimile if there are any additional questions. And, Applicant and Applicant's attorney are amenable to email and telephone communications to discuss any issues, questions, or comments that would facilitate the understanding of the present invention and expedite the patent process.

Please direct any questions or correspondence to the undersigned.

Respectfully submitted,

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VERSION WITH MARKING TO SHOW CHANGES

In the Claims:

2.(Amended) The improved packaging material according to claim 1, wherein said polymeric material is selected from the group consisting of polyethylene, polypropylene, polyester, nylon, polystyrene, styrene butadiene, cellophane, and polyvinyl chloride, in monolayers, coextrusions, <u>or</u> [and] laminates.

10.(Amended) The improved packaging material according to claim 7 [1], <u>wherein said bag has an upper portion and a bottom portion, and</u> wherein said registered target area is a small identifiable area in an upper <u>one-</u>quarter <u>of said upper portion</u> of said <u>bag</u> [package].

11.(Amended) The improved packaging material according to claim 7 [1], <u>wherein said bag has an upper portion and a bottom portion, and</u> wherein said registered target area is a small identifiable area in an upper <u>one-</u>third <u>of said upper portion</u> of said <u>bag</u> [package].

13.(Amended) The improved packaging material according to claim 1, wherein each of said microperforations has an average diameter between 110 and 400 microns [preferably 120 to 160 microns].

14. (Amended) The improved packaging material according to claim 1, wherein said polymeric material has a CO_2 transmission rate that is 2.5 to 5.0 times greater than the O_2 transmission rate [most preferably 3.4 to 4.0 times greater].

15. (New) The improved packaging material according to claim 1, wherein each of said microperforations has an average diameter in the range between 120-160 microns.

16.(New) The improved packaging material according to claim 1, wherein said polymeric material has a CO_2 transmission rate that is 3.4 to 4.0 times greater than the O_2 transmission rate.